

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventors: Naoyuki TANIGUCHI, et al.

Serial No.: (Div Of 09/442,629)

Filing Date: (Herewith)

For: ALPHA 1-6 FUCOSYLTRANSFERASE

Anticipated Art Unit: 1652

Anticipated Examiner: M. Rao

ASSISTANT COMMISSIONER  
FOR PATENTS  
Washington, D.C. 20231

**PRELIMINARY AMENDMENT**

S I R:

Prior to examination of the above-identified application, please enter the following amendments.

**In the Specification:**

On page 1, between the title and the heading "Technical Field" insert  
– Cross Reference to Related Applications.

The present application is a divisional of Application Serial No. 09/442,629, filed November 18, 1999, which is a divisional of 08/913,805, now patent no. 6,054,304, filed January 7, 1998, which is a 371 of PCT/JP97/00171 filed January 23, 1997, the subject matter of which is incorporated herein by reference.--

Please replace the first full paragraph on page 16 with the following paragraph:

–The present invention is a gene encoding human  $\alpha$ 1-6 fucosyltransferase,

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which includes, as one embodiment, a gene encoding  $\alpha$ 1-6 fucosyltransferase and including a gene encoding an amino acid sequence depicted in Sequence Listing, SEQ ID NO:10. A different embodiment thereof is a gene encoding  $\alpha$ 1-6 fucosyltransferase inclusive of nucleotide sequence depicted in Sequence Listing, SEQ ID NO: 9. A further aspect of the present invention is a gene encoding  $\alpha$ 1-6 fucosyltransferase and including a nucleotide sequence from 198<sup>th</sup> adenine to 1922<sup>nd</sup> adenine as depicted in Sequence Listing, SEQ ID NO:9.--

**In the Claims:**

Please cancel claims 1-26 without prejudice.

Please add the following new claims:

27. An isolated, porcine  $\alpha$ 1-6 fucosyltransferase having the following physico-chemical properties:

(1) action: transferring fucose from guanosine diphosphate-fucose to a hydroxy group at 6-position of GlcNAc closest to R of a receptor

(GlcNAc $\beta$ 1-2Man $\alpha$ 1-6)(GlcNAc $\beta$ 1-2Man $\alpha$ 1-3)Man $\beta$ 1-4GlcNAc $\beta$ 1-4GlcNAc-R wherein R is an asparagine residue or a peptide chain carrying said residue, whereby to form (GlcNAc $\beta$ 1-2Man $\alpha$ 1-6)-(GlcNAc $\beta$ 1-2Man $\alpha$ 1-3)Man $\beta$ 1-4GlcNAc $\beta$ 1-4(Fuc $\alpha$ 1-6)GlcNAc-R

(2) optimum pH : about 7.0

(3) pH stability : retains activity after 5 hours of treatment at 4°C at

a pH range of 4.0-10.0

(4) optimum temperature : about 30-37°C

(5) inhibition or activation : no requirement for divalent metal for expression of activity; no inhibition of activity in the presence of 5 mM EDTA

(6) molecular weight: about 60,000 by SDS-polyacrylamide gel electrophoresis.

28. The  $\alpha$ 1-6 fucosyltransferase of claim 27, which is purified from porcine brain.

29. The  $\alpha$ 1-6 fucosyltransferase of claim 27, which is recombinantly produced.

30. An isolated polynucleotide encoding amino acid sequence as depicted in Sequence Listing, SEQ ID NO:2.

31. The isolated polynucleotide of claim 30, comprising a nucleotide sequence as depicted in Sequence Listing, SEQ ID NO:1.

32. An expression vector which comprises the isolated polynucleotide of any one of claims 30-31.

33. A transformant cell obtained by transforming a host cell with the

expression vector of claim 32.

34. A method for producing a recombinant  $\alpha$ 1-6 fucosyltransferase, comprising culturing the transformant cell of claim 33, and harvesting the  $\alpha$ 1-6 fucosyltransferase from a culture thereof.

35. A recombinant  $\alpha$ 1-6 fucosyltransferase produced according to the method of claim 34.

36. An isolated polynucleotide encoding  $\alpha$ 1-6 fucosyltransferase derived from porcine tissue, having the following physico-chemical properties:

(1) action: transferring fucose from guanosine diphosphate-fucose to a hydroxy group at 6-position of GlcNAc closest to R of a receptor

(GlcNAc $\beta$ 1-2Man $\alpha$ 1-6)(GlcNAc $\beta$ 1-2Man $\alpha$ 1-3)Man $\beta$ 1-4GlcNAc $\beta$ 1-4GlcNAc-R wherein R is an asparagine residue or a peptide chain carrying said residue, whereby to form (GlcNAc $\beta$ 1-2Man $\alpha$ 1-6)-(GlcNAc $\beta$ 1-2Man $\alpha$ 1-3)Man $\beta$ 1-4GlcNAc $\beta$ 1-4(Fuc $\alpha$ 1-6)GlcNAc-R

(2) optimum pH : about 7.0

(3) pH stability : stable in the pH range of 4.0-10.0 by treatment at 4°C for 5 hours

(4) optimum temperature : about 30-37°C

(5) inhibition or activation : no requirement for divalent metal for expression of activity; no inhibition of activity in the presence of 5 mM

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EDTA

(6) molecular weight : about 60,000 by SDS-polyacrylamide gel electrophoresis.

37. An expression vector which comprises the isolated polynucleotide of claim 36.

**REMARKS**

Claims 1-26 have been cancelled.

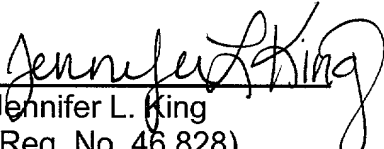
New claims 27-37 and the amendment to the Specification are fully supported by the specification as originally filed. No new matter has been added.

New claims 27-37 mirror claims issued in U.S. Patent No. 6,054,304 and allowed in application U.S. Serial No. 09/442,629. Accordingly, Applicants believe that this application is in condition for allowance, and such disposition is earnestly solicited.

Examination of this application is respectfully requested.

Respectfully submitted,

Date: 23 April, 2001

  
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### Version With Markings To Show Changes Made In Replacement Paragraph

The replacement paragraph for the first full paragraph on page 16 differs from the original paragraph as follows:

–The present invention is a gene encoding human  $\alpha$ 1-6 fucosyltransferase, which includes, as one embodiment, a gene encoding  $\alpha$ 1-6 fucosyltransferase and including a gene encoding an amino acid sequence depicted in Sequence Listing, SEQ ID NO:10. A different embodiment thereof is a gene encoding  $\alpha$ 1-6 fucosyltransferase inclusive of nucleotide sequence depicted in Sequence Listing, SEQ ID NO: 9. A further aspect of the present invention is a gene encoding  $\alpha$ 1-6 fucosyltransferase and including a nucleotide sequence from 198<sup>th</sup> adenine to [1919<sup>th</sup> guanine] 1922<sup>nd</sup> adenine as depicted in Sequence Listing, SEQ ID NO:9.--